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EXAMINER

CUNEO, KAMAND

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 12

Application Number: 09/377286

Filing Date: 8/18/99

Appellant(s): Brad Rumsey

MAILED

MAY 20 2002

GROUP 2000

Timothy Trop
For Appellant

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed 1/2/02.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

Claims 1-8, 10-30 are pending.

Claims 7-8, 13, 15, 17-18 and 20-30 are withdrawn from consideration as not directed to the elected invention of Group I, species A, identified in paper #4.

Claims 1-6, 10-12, 14, 16 and 19 stand rejected and are on appeal.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

Appellant's brief includes a statement that claims 1, 3, 10 and 14 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) *Prior Art of Record*

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

3537176

Healy et al.

11/3/1970

(10) *Grounds of Rejection*

The following ground(s) of rejection are applicable to the appealed claims:

35 USC 102 includes the following sections which state:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 10-12, 14, 16 and 19 are rejected under 35 USC 102(b) as being anticipated by Healy et al. (US 3537176, hereafter Healy).

Claims 1-4, 9-12 and 19 are clearly anticipated by figure 1 of Healy.

Claims 5-6 and 14 are clearly anticipated by figure 2 of Healy.

Claim 16: The forces applied to the ball and emulation of the trace all arise (as disclosed by the specification) from the structure of the stub in conjunction with the trace. As this structure is identically disclosed by Healy, the function of claim 16 must be inherent to the device of Healy.

(11) Response to Argument

Appellant's argument with respect to claim 1 is that Healy does not anticipate this claim because Healy does not apply an attractive force to the solder placed on the interconnection pad. Appellant argues that Healy does not apply an attractive force because Healy does not show an exposed trace.

Healy shows in figure 1, which is a fragmentary view of the insulating printed circuit trace after a solder bead has been applied to it, that portions of the trace and the stub are exposed. Figures 2-3 also show an area around the bead that is void of insulating material (2) which renders that area exposed. Therefore, this feature is indeed shown by Healy.

More importantly, however, claim 1 states that the assembly includes a pad, a trace that applied an attractive force and coupled to the pad and extending away from it and a trace stub. Claim 1 does not state that the trace is exposed. The attractive force of the trace on the solder is created by the trace being coupled to and extending away from the pad. This is the structure that support the function of providing an attractive force which the specification sets forth and which is recited in the claims.

Further, in the first office action (paper #5), examiner raised a rejection under section 112, paragraph 2, on claim 16 (which at that time recited the function of providing an attractive force) because it was not clear whether that attractive force applied by the trace resulted from the configuration of the trace coupled to the pad as recited in claim 1 or whether some other feature was required to provide this attractive force. Examiner stated in the rejection

that if some other feature was required, then the claim was incomplete. In response to this rejection (paper #6, amendment A), *appellant amended claim 16 to recite "the attractive force applied by the trace to said solder arises from the trace being coupled to and extending away from said bond pad." Page 2, last paragraph, of the remarks corresponding to that amendment state "[c]laim 16 has been amended to clarify that the function follows from the claimed structure of the trace and the trace stub."* Therefore, as the "claimed structure" includes absolutely no recitation of exposure, appellant has stated that attractive force is applied by the trace being coupled to the pad. As Healy undisputedly shows in this feature, the claim is properly anticipated by Healy.

Appellant's other explanations why the trace of Healy is not exposed are not found persuasive. Appellant asserts that if the area of figure 2 is superimposed on figure 1 then it is clear that the trace is not exposed. This is not persuasive because the drawings are not to scale and figures 1 and 2 are different perspectives. Further, figure 2 and 3 show the void around the solder bead (3), figure 1 clearly shows exposed portions and figure 4 of Healy also shows exposed portions. Furthermore, one of ordinary skill in the art, would have construed the void illustrated by Healy as defining an exposed pad and exposed portions of the trace and stub as shown in figures 1 and 4. To support this assertion, examiner points to all of the other prior art of record (US patents 6028366, 5585162, 5519580 to Abe, Schueller and Natarajan et al.) which have better illustrations and clearly show that where the insulation is receded around the pad, parts of the trace remain exposed. This is what figures 1-4 of Healy also show.

With respect to claim 3, appellant argues that Healy does not show a non-solder mask defined pad because the pad is defined by the surrounding insulation. Again, as stated above, examiner believes that Healy shows a void around the pad and the traces which defines an

exposed pad, therefore, this argument is the same as that with respect to claim 1 which alleges that the insulation (2) does not expose any part of the trace (1). For the reasons stated above, examiner believes that Healy shows the pad and its perimeter exposed. Therefore, the pad is non-solder mask defined.

More importantly, as clearly seen from figure 1, the pad is defined by the enlarged metallic portion (4). *Even if no insulation existed, this pad would be defined by the perimeter of the circle shown at (4) in figure 1.* Therefore, irrespective of the location of the insulation, the pad is defined the perimeter of the metallic area of (4) and not by any thing else. This is another reason why the pad is a non-solder mask defined pad.

Appellant argues with respect to claim 10 that Healy does not show an element which counteracts the attractive force of the trace on the solder. As clearly seen in the figures of Healy, the element is the stub trace which is diametrically opposed to trace (1) . This is precisely the same element that appellant sets forth in his specification which counteracts the attractive force of the trace. Therefore, this element is also shows in Healy.

Appellant again argues that the solder deposition region is only as large as the pad. By this statement, appellant is saying that insulation (2) of Healy covers all but a portion of pad (4). Therefore, there is no exposed portion of the trace or stub. Therefore, the element cannot create a force to counteract the attractive force of applied by the trace. First, as stated above, examiner believes that the exposed areas are shown by Healy and, and therefore, the functionality of providing an attractive force by the trace and a counteracting force by the stub is disclosed.

Moreover, examiner would like to point out that claim 10 recites three elements: a pad, a trace and a stub. There is absolutely *no mention of any insulation, mask, coverage or exposure in claim 10*. Therefore, the argument with respect to the location of the solder mask is moot because the claim does not require the presence of the mask or any other layer for that matter.

With respect to claim 14, appellant argues that the opening is not shown and therefore, the element cannot extend through the opening. Claim 14 recites that the system of claim 10 (including a pad, a trace coupled thereto and an element adapted to counteract the attractive force) includes a solder mask defining an opening and the element extending from the pad and through the opening. The solder mask of claim 14 corresponds to the insulating material (2) of Healy (as is well known in the art) which has an opening in it as clearly shown in figures 1-3. Appellant does not dispute the mask being element (2) or the existence of the opening, but argues that the opening delimits the pad, and therefore, the stub, the element counteracting the attractive force, cannot extend through the opening. Therefore, once again appellant is arguing that there is no open area around the pad of Healy. This argument is not persuasive as discussed with respect to claim 1, 3 and 10 above and will not be repeated here.

For the above reasons, it is believed that the rejections should be sustained.


Respectfully submitted,



K. Cuneo
Primary Examiner
May 5, 2002

Conferees:

David L. Talbott

Arthur T. Grimley 

Kamand Cuneo